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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/993,138	11/16/2001	Jared L. Zerbe	RB1-040US	6177

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EXAMINER	
SINGH, RAMNANDAN P	
ART UNIT	**PAPER NUMBER**
2614	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)	
Office Action Summary	09/993,138	ZERBE, JARED L.	
	Examiner	**Art Unit**	
	Ramnandan Singh	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08). Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Alexander et al [US 20030002474 A1] in view of Franaszek et al [US 4,486,739].

Regarding claim 1, Alexander et al teach a method comprising:

communicating the signal over a plurality of segments of al least four signal lines [Fig. 2; Para: 0034-0041]; and

transposing the signal lines between the segments of signal lines in a manner that reduces differences in interline couplings between a given signal line and each of the remaining ones of the at least four signal lines [Figs. 8A-8F; Para: 0101-0121].

Alexander et al do not teach expressly using encoding a digital signal for transmission.

Franaszek et al teach an encoder circuit for encoding a digital signal [Figs. 1-13; col. 4, line 30 to col. 6, line 36].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Franaszek et al with Alexander et al in order to incorporate encoded digital signals so that the data throughput of a communication system is increased [Franaszek et al; col. 1, lines 7-22].

3. Claims 1-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schelkunoff [US 2,038,240] in view of Franaszek et al [US 4,486,739].

Regarding claim 1, Schelkunoff teaches a method comprising:

communicating the signal over a plurality of segments of at least two signal lines [Fig. 2; col. 3, lines 51-58]; and

transposing the signal lines between the segments of signal lines in a manner that reduces differences in interline couplings between a given signal line and another signal line [Fig. 2; col. 3, lines 38-72; claim 5].

Alexander et al do not teach expressly using encoding a digital signal for transmission.

Franaszek et al teach an encoder circuit for encoding a digital signal [Figs. 1-13; col. 4, line 30 to col. 6, line 36].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Franaszek et al with Schelkunoff in order to incorporate encoded digital signals so that the data throughput of a communication system is increased [Franaszek et al; col. 1, lines 7-22]. Further, although Schelkunoff teaches reducing cross-talk between a plurality of coaxial conductor lines using a pair of lines as an illustration [Fig. 2; col. 3, lines 39-57], it is within the level of ordinary skill to apply the method to reduce interline couplings between a given signal

line and any number of remaining conductor lines including at least four signal lines.

Regarding claim 2, Schelkunoff further teaches the method, wherein the interline coupling of a particular pair of signal lines is represented as a function of the distances between the particular pair of signal lines over all the segments [col. 4, 45-50].

Regarding claim 3, Schelkunoff further teaches the method, wherein the interline coupling of a particular pair of signal lines is represented as a function of a summation of the distances between the particular pair of signal lines over all the segments, wherein the summation of distances is not shown [Fig. 2].

Regarding claim 4, Schelkunoff further teaches the method, wherein, in general, the segments may be of different (or approximately equal) lengths [col. 3, lines 45-50].

Regarding claims 5-7, the limitations are shown above.

Regarding claims 8-43, they are inherent variations of the method claims 1-7. Therefore claims 8-43 are interpreted and thus rejected for the reasons stated above in claims 1-7.

Response to Arguments

4. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(i) Nyquist [US 2,070,744] teaches crosstalk reduction in communication systems [Whole document]; and

(ii) Balde [US 3,764,727] teaches transposing each wire in the pair [Figs. 1-15; col. 1, lines 19-38].

(iii) Hinderks [US 6,700,958 B2] teach a method for transmitting coded digital signals through a transmission channel [Figs. 1, 12-13, 16-17; Abstract].

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (571) 272-7529. The examiner can normally be reached on M-TH (8:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (571) 272-7547. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on

access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ramnandan Singh
Examiner
Art Unit 2614